

## WG 159 DeepSeaDecade: Roadmap for a Standardised Global Approach to Deep-Sea Biology for the Decade of Ocean Science for Sustainable Development.

### 1. Brief summary with the main highlights (200-300 words)

The principle aim of this working group was to deliver an overarching plan that formed the basis of deep-sea biological research for the next decade. That plan was developed and delivered at the start of the UN Ocean Decade in the form of a peer reviewed publication (Howell et al., 2020). This publication formed the basis of an application to the IOC to endorse a new UN Ocean Decade global programme “Challenger 150”. The SCOR working group then served as the steering committee of that programme, establishing the programme, building a long-term management structure, and continuing to address the working group TORs through that Programme. This year sees the final year of the SCOR working group, and as such the group has formally handed over its role as steering committee to the new management structure for Challenger 150. In addition, the group has focused its efforts on TOR 5: to actively facilitate efforts to build capacity in developing nations for deep-sea science. Again, here we have used the Challenger 150 Programme as a vehicle to help engage a wider audience and ultimately to enact any plans developed, ensuring longevity of the working groups efforts and SCOR’s investment.

### 2. Activities since previous report to SCOR (e.g., virtual or in-person meetings, email discussions, special sessions). Limit 1000 words

SCOR working group 159 held an online meeting in November 2022. This meeting focused on discussion around TOR 5 and the development of a plan of action for capacity building for deep-sea science. It was noted there were a number of initiatives already in place and we should combine efforts where possible and avoid duplication. Notably the Ocean Discovery League was already developing a report into barriers to deep-sea science, while initiatives such as POGO and COBRA were offering potential ship berth spaces and cruise PI training. The One Ocean Hub (a project under the Challenger 150 Programme) had also recently developed a new African Network of Deep-water Researchers to help bring scientists together on the African continent. It was noted there was a distinct need to build capacity on the African continent, and that a meeting, bringing relevant organizations together to discuss solutions to identified barriers to capacity development, might be a good way forward. The working group coordinators, with the full support of the working group, approached SCOR to seek permission to hold the final in-person SCOR working group meeting in South Africa, and invite key experts to that meeting to collaboratively develop a plan of action for capacity building for deep-sea science on the African continent. This meeting was held in July 2022 and a summary report produced for SCOR. It is our intention to continue to work with the various groups whose representatives were invited to that meeting, to now develop a formal UN Ocean Decade report in which SCOR will be formally acknowledged. In its role as the steering committee for the Challenger 150 Programme, the working group has coordinated the further development of technical working groups dealing with standards in image analysis, litter recording, and traits-based classifications.

3. Documents published since previous report to SCOR (e.g., peer-reviewed journal articles, reports, Web pages) and should be limited to publications that resulted directly from WG activities and which acknowledge SCOR support

This publication is the first from one of the regional working groups of the Challenger 150 programme. The SCOR working group have served as the steering committee for that programme and encouraged the community (including SCOR WG representatives from that region) to develop this paper as part of the regional capacity development work. It therefore acknowledges SCOR and is a result of TOR 5.

Bridges AB, Howell KL, Amaro T, Atkinson L, Barnes D, Bax N, Bell J, Bernardino A, Beuck L, Braga-Henriques A, Brandt A, Bravo M, Brix S, Butt S, Carranza A, Doti B, Elegbede I, Esquete P, Freiwald A et al (2023). Review of the Central and South Atlantic Shelf and Deep-Sea Benthos: Science, Policy, and Management. 10.1201/9781003363873-5.

4. Progress toward achieving group's terms of reference. List each term of reference separately and describe progress on each one. Limit 1000 words

1. To develop a global plan for survey / sampling deep-sea ecosystems to underpin deep-sea research for the UN Decade of Ocean Science.

Plan has been discussed and published as Howell et al., 2020; a global programme has been endorsed by the IOC as an Ocean Decade action.

2. To agree on methods and standards for the acquisition of biological data, including the role of existing and novel technologies.

Included within TOR 1 paper output. In addition, the working group has, through the Challenger 150 Programme, established 3 technical working groups to deal with standards in image-based data, litter recording, and traits-based data. These groups have met at least once this year. The image group has identified a list of priority actions needed in terms of standards, particularly in light of delivering high quality training data for use in training artificial intelligence in identification of animals from imagery.

3. To develop habitat-specific approaches for survey / sampling the deep-sea ecosystem, that integrate the global approaches developed under ToRS 1 and 2, but allow greater specialisation.

included within TOR 1 paper output.

4. To integrate ToRs 1-3 with wider efforts under the Global Ocean Observing System (GOOS) via the Deep Ocean Observing Strategy (DOOS).

Outline included within TOR 1 paper output (Howell et al. 2020), we continue to engage with DOOS on all activities.

5. To actively facilitate efforts to build capacity in developing nations for deep-sea science

Last year our members participated in a global survey of capacity development needs for deep-sea science undertaken by the Ocean Discovery League (ODL). This year ODL delivered their report and we held a meeting to discuss our working group plans (see answer to 2.). This resulted in a special working group meeting held in person in South Africa in July 2022 to discuss concrete actions that can be taken to address biological science capacity gaps on the African continent, and a resulting summary report provided to SCOR.

5. WG activities planned for the coming year. Limit 500 words

None, the group's term and TORs are complete. However, members of the group will continue the groups work via the Challenger 150 UN Ocean Decade Programme, which was borne in part from this working group.

6. Is the group having difficulties expected in achieving terms of reference or meeting original time schedule? If so, why, and what is being done to address the difficulties Limit 200 words

None, all TORs have been met.

7. Any special comments or requests to SCOR. Limit 100 words.

Additional information can be submitted and may be posted at the SCOR Annual Meeting webpage at the discretion of the SCOR Executive Committee Reporter for the WG and the SCOR Secretariat.